What is claimed is:

1. A flame retardant cable comprising:

an insulated conductor which comprises

(a) a conductor;

(b) an inner insulation layer surrounding the conductor; and

(c) an outer insulation layer surrounding the inner insulation layer,

wherein the insulated conductor having a composite dielectric constant less than or equal to 2.6 and a composite dissipation factor of less than or equal to 0.005,

and wherein the inner insulation layer or the outer insulation layer has a dielectric constant greater than 2.6 or a composite dissipation factor greater than 0.005.

2. A flame retardant cable comprising:

an insulated conductor which comprises

(a) a conductor;

(b) an inner insulation layer surrounding the conductor; and

(c) an outer insulation layer surrounding the inner insulation layer,

wherein the insulated conductor having a composite dielectric constant less than or equal to 2.6 and a composite dissipation factor of less than or equal to 0.005,

and wherein a first polymeric composition for preparing the inner insulation layer comprises a first non-halogenated polymer and being substantially-free of halogenated flame retardant additives or antimony oxide and a second polymeric composition for preparing the outer insulation layer comprises a second non-halogenated polymer and being substantially-free of halogenated flame retardant additives or antimony oxide.

3. The cable as recited in claim 2, wherein the first polymeric composition further comprises non-halogenated flame retardant additives in an amount no more than 30 parts per hundred parts of the first non-halogenated polymer by weight and the second polymeric composition further comprises non-halogenated flame retardant additives in an amount between 100 to 300 parts per hundred parts by weight of the second non-halogenated polymer by weight.

4. The cable as recited in claim 3, wherein the non-halogenated flame retardant additives are selected from the group consisting of ethylene diamine phosphate, melamine, melamine pyrophosphate, melamine phosphate, ammonium polyphosphate, melamine polyphosphate, calcium carbonate, talc, clay, organo-modified clay, calcium hexaborate, alumina, titanium oxides, carbon nanotubes, zinc

borate, wollastonite, mica, silicone polymers, phosphate esters, hindered amine stabilizers, melamine octomolybdate, ammonium octomolybdate, expandable graphite, frit, hollow glass beads, and mixtures thereof.

5. The cable as recited in claim 4, wherein the insulated conductor has two layers which have a composite dielectric constant (ε_t) and a composite dissipation factor (tan δ_t) defined by the following

$$\varepsilon_t = \frac{\varepsilon_1 \varepsilon_2 \ln(r_2/r_0)}{\varepsilon_2 \ln(r_1/r_o) + \varepsilon_1 \ln(r_2/r_1)}$$

and

$$\tan \delta_t = \frac{\frac{\tan \delta_1}{\varepsilon_1} \ln(\frac{r_1}{r_o}) + \frac{\tan \delta_2}{\varepsilon_2} \ln(\frac{r_2}{r_1})}{\frac{\ln(\frac{r_1}{r_0})}{\varepsilon_1 [\tan \delta_1^2 + 1]} + \frac{\ln(\frac{r_2}{r_1})}{\varepsilon_2 [\tan \delta_2^2 + 1]}}$$

where ε_1 and ε_2 are the dielectric constants of the inner and outer insulation layers, respectively, and r_0 is the radius of the conductor; r_1 is the sum of r_0 and the thickness of the inner insulation layer; and r_2 is the sum of r_1 plus the thickness of the outer insulation layer; and where tan δ_1 and tan δ_2 are the dissipation factors of the inner and outer insulation layers, respectively.

6. The cable as recited in claim 1 where the inner insulation layer, the outer insulation layer, or both insulation layers are foamed.

7. The cable as recited in claim 1, comprising four twisted pairs of the insulated conductor and a plenum-rated jacket material.